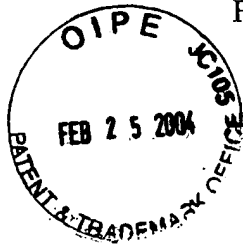


MARKED UP VERSION

In re: Hoffman, Neil et al.

Serial No.: 10/702,364

Filed: November 6, 2003



PATENT

Docket No: 2054US

**METHODS FOR THE IDENTIFICATION OF INHIBITORS OF BIOTIN SYNTHASE
EXPRESSION OR ACTIVITY IN PLANTS**

This application is the national phase under 35 U.S.C. § 365[71] of PCT
5 International Application No. PCT/US02/14473, that has an International filing date of
May 7, 2002, which designated the United States of America and which claims the
benefit of U.S. Provisional Application Serial No. 60/289,312, filed May 7, 2001.

FIELD OF THE INVENTION

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The invention relates generally to plant molecular biology. In particular, the
invention relates to methods for the identification of herbicides.

BACKGROUND OF THE INVENTION

15 Biotin synthase ("BS") from plants has been fairly well characterized. Biotin
synthase (bioB, BIO2, BS) (EC 2.8.1.6) is involved in the conversion of dethiobiotin to
biotin in bacteria, yeast, and higher plants. Bui et al., 440 FEBS LETT. 226-30 (1998)
(PMID: 9862460); Baldet et al., 217 EUR. J. BIOCHEM 479-85 (1993) (PMID: 8223585);
and Baldet et al., 319 CR ACAD. SCI. III 99-106 (1996) (PMID: 8680961). This
20 enzymatic reaction involves the unusual addition of sulfur to form a thiophene ring.
Ollagnier-de Choudens et al., 453 FEBS LETT. 25-28 (1999) (PMID: 10403368).
Isolation of a complete biotin synthase Arabidopsis cDNA was first reported in 1996.
Baldet et al., 319 CR ACAD. SCI. III 99-106 (1996) (PMID: 8680961). The predicted
amino acid sequence of the plant protein contains the consensus region
25 GXCXEDCXYCXQ involved in the [2Fe-2S] cluster binding. Id. The threonine-173
residue, which is highly conserved in biotin synthases, was further shown to be